DOCUMENT RESUME

ED 356 766 IR 015 987

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TITLE Student Attitudes toward Learning Link: A Distance Education Project.
PUB DATE 92
NOTE 13p.; Paper presented at the Annual Meeting of the Mid-South Educational Research Association (Knoxville, TN, November 11-13, 1992).
PUB TYPE Information Analyses (070) -- Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Classroom Observation Techniques; *Distance Education; Educational Equipment; Educational Research; Graduate Students; Higher Education; *Interactive Video; Interviews; Nontraditional Education; Preservice Teacher Education; *Student Attitudes; Teaching Methods; Telecommunications
IDENTIFIERS Memphis State University TN; Student Surveys; Training Needs

ABSTRACT

The purpose of this study was to investigate the first offering of two interactive distance education courses--curriculum and instruction and educational administration--at Memphis State University. Subjects were the 69 graduate students enrolled in the classes and the 2 instructors; data were collected by written surveys, interviews, and class observations. Areas examined included study habits, use of equipment, technical quality of sound and video, instructors' questioning techniques, the distance education environment, the nature of distance education courses, teaching strategies, effect of the equipment on student performance, and student preferences for teaching methods. Based on the findings, several recommendations were offered related to audio problems, distance education instructor training programs, use of graphics, the addition of a toll-free telephone number, and the method for controlling the position of the cameras. It was concluded that the most effective instructional strategy is a well-designed lecture supported by planned visual aids; instructor presentations are less affected by the limitations of the distance learning environment than are interactive, recitation-type strategies of whole-classroom discussion; group projects or discussions within classes appear to work well; and instructors need to become better skilled at orienting their instructional methods to the special conditions of the distance learning context. (Contains 12 references.) (ALF)

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Student Attitudes Toward Learning Link: A Distance Education Project

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If technology is to focus on the individual learner, then the educational setting will have to involve media, technology, and communications (Ely, 1988). If equity is a focus of the educational setting, then distance education is an instructional delivery system that will use technology to reach this goal (Ely, 1988; Moore & McLaughlin, 1992). Although the technology applications used for distance education vary, the unifying factor is that the learner is at a distance from the instructor.

Interactive distance education has been defined (Hale, 1988) as the sharing of instruction among two or more sites using telecommunications technology while providing interaction among the participants. The interaction among participants is the key to the success of distance learning because nonverbal communication cues are important for the instructor as well as the other students (Moore & McLaughlin, 1992).

Educators have recognized the influence of broadcast television for several years (Potter, 1984) and have tried to harness this preoccupation by students into meaningful educational experiences. Because of the high interest appeal of broadcast television, teachers in classrooms have assigned home TV viewing, brought television programs into classrooms for viewing, and have even taught students about television production (Potter, 1984). As broadcast instructional programming became a part of the educational program in schools, utilization workshops for teachers were held and studies were conducted to analyze student achievement with instructional programming ("Children's Learning from Television", Educational Technology Research and Development, 1990).

How television works as a medium of communication was the topic of discussion by Bruffee (1982) where he theorized that learning is not merely the assimilation of information but is a social activity. Bruffee (1982) further theorized that since watching

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television is a social activity then utilization of television for instructional purposes must be restructured as a collaborative learning experience.

Beentjes (1989) replicated a study based on Salomon's model which stated that children usually invest less effort in television viewing than in other forms of information delivery, especially books. It was theorized that the perception of the medium would have implications on the amount of invested mental effort of students. In Beentjes's (1989) study, Dutch children did not unconditionally perceive television as an easy medium and did tend to invest mental effort when using television as an information medium. Another study involved perceptions of different types of television information delivery systems which included interactive video, instructional television, and television (Cennamo, Savenye, & Smith, 1991). The results of this study indicated that learners did perceive differences in the three forms of television delivery systems in their ability to facilitate learning.

Not only have studies been conducted regarding student perceptions of the various forms of televised information delivery, but studies have also been conducted regarding student attitudes toward interactive distance education.

The attitudes of 75 high school seniors in Alabama were assessed after they were given a chance to take a one-way video, two-way audio college course to determine if they wanted to attend college after high school graduation (Wilson, 1990). The focus of the study was to determine if the students remained satisfied over the duration of the instruction. The findings revealed that students were satisfied with the instructional program and many decided to attend college.

A program implemented at the University of Northern Colorado used compressed video for its distance education program. A survey of student participants revealed that the instructors should receive training in televised teaching techniques, have a carefully created instructional environment, and should have technical support available (Riddle, 1990). Students felt that students and instructors should get acquainted face to face and that the

interactivity among the participants and instructor should be maximized. Further, it was suggested that the prototype should be tested often and that there should be regular exchanges for suggestions.

To determine attitudes of post-secondary students enrolled in classes offered by interactive instructional television systems, a study was conducted at four community colleges in Iowa (Stahmer, Smaldino, Hardman, & Muffaletto, 1992). A majority of the students agreed that interactive instructional television was an effective method for offering college classes and agreed that they would take more courses offered through distance education (Stahmer, Smaldino, Hardman, & Muffaletto, 1992).

Based on the literature to date, it appears that learning by interactive telecommunications technology involves perceptions and attitudes of the learners towards the medium, itself, and towards the methods of learning associated with the medium. Since interactive distance education is relatively new, there is very little research on how to design instruction specifically for this medium. The medium combines many of the qualities of a classroom and of broadcast television. Yet, the technology in its implementation lacks the immediacy one finds with a well orchestrated broadcast of a football game. Sceiford (1978) suggested a comprehensive research agenda regarding learning by television which included, but was not limited to, the logistics of the television learning environment.

The purpose of the present study was to investigate the first offering of two interactive distance education courses at Memphis State University. Of particular interest was how the students responded to the delivery mode and the methods of instruction.

Method

In the Spring of 1992, Memphis State University initiated an interactive distance education project with two classes offered through the College of Education. The primary site (location of instructor) was in Memphis and the secondary site was in Jackson at the Memphis State facility on the Jackson State Community College Campus. Two instructors

volunteered to participate in the project and a total of 69 graduate students were enrolled in the classes: 40 of the students were at the Memphis location while 29 were at the Jackson State campus. One class was in curriculum and instruction and the other was in educational administration.

Three methods of data collection were used. These included three written surveys, interviews, and class observations. The pre-course survey contained two sections with the first section containing open-ended questions to ascertain demographic information and eight questions about prior experience with distance education courses. The second section of the survey consisted of 11 questions directed at the students' perceptions about the course. The survey was administered before the instructors' first presentations. At the middle of the spring semester, a second survey consisting of 18 questions was administered to students in both locations. During the last week of the spring semester, a final survey was administered to students in both courses. The survey consisted of 21 Likert-type items, one ranking item with five options, and five open-ended questions.

Interviews were conducted with a random sampling of students at different times during the semester. Each instructor was interviewed near the end of the semester using a structured interview format. Each class was observed on-site in Memphis or Jackson for a total of three class observations for each course. Videotapes were also made of randomly selected classes.

Results and Discussion

The pre-course survey revealed that most of the students (from 70-80%) in both courses indicated that they would study about the same amount of time, rely on classmates about the same, and take the same amount of notes in the distance course as they would in a course with the instructor physically present in the classroom. Students in Jackson were slightly more likely to rely on classmates than students in Memphis. Most students in both locations rated the equipment as somewhat distracting and only 22% rated it "not

distracting". About half of the students responded that their grade would be affected to some degree by the instructor dealing with the equipment or students in the other location.

Six of the items in the midcourse survey concerned the use of equipment. Most students (57%) disagreed that the instructors spent too much time with the equipment while one-fourth (23%) agreed. Students were almost evenly divided about the need for a full-time technician, with 45% disagreeing and 35% agreeing (19% were undecided). Most students (63%) felt that the sound quality was poor while 30% felt that more video monitors were needed. That was a general agreement (61%) that there were too many disruptions due to the distance education equipment. Students also felt very strongly (91% agreement) that it is important to both see and hear either the instructor or student who is talking. One student suggested in a written comment that the course was improving.

> "I think the whole class has gotten a little better since the technical problems have been solved. Not to slight the instructor in any way, but I seem more attentive when he is at the offsite location. Most of the problems that I have with the class do not deal with the distance T.V. project."

Students offered several comments on the technical quality of the sound and video. The following are representative of the comments, which were mostly negative. "The most irritating is not being able to hear comments and questions from the Memphis group. It is very disconcerting to not be able to hear and not be heard when the teacher is not in Jackson. You answer a question and the instructor never hears your answer." "Big screen TV would be better to see facial expressions." "I still can't see any value in distance education. It has only hindered this class (not to mention wasted parts of our class time). Why devalue students and put such great importance on this technology?"

Observations of the instructors indicated that they used different questioning techniques, but each tried to position the camera on the student answering the question. Redirecting the camera to the student who is speaking, however, is a disruptive process. The instructor must touch a stylus to one of four arrows on a touch pad to position the cameras. Thus, the instructor's attention is divided between the touch pad and the video

monitor rather than on the classroom activity. The difficulty of positioning the camera for discussion was expressed by one student. "Questions and discussion are hard because we have to pinpoint the person and that takes too long. It like it best when the instructor is here!"

Four of the midcourse survey items asked students about the use of questioning. When asked if the instructor should place less emphasis on the use of questioning in lectures, 48% disagreed and 32% agreed with the statement. The majority (55%) of the students felt questions should be directed to the whole class. When asked if the camera made the students shy about asking or answering questions, the Memphis students tended to disagree, but the Jackson students tended to agree. It should be noted that an image of the Jackson class was almost always displayed in both classrooms. The Jackson class typically saw only the instructor or the Memphis student answering a question on one monitor and the other displayed the image of the Jackson classroom except when a graphic was displayed. (The second monitor in the classroom displayed the image sent to Jackson which was typically the instructor.) The fourth item asked the students if the instructor should use more small group discussions. Both locations indicated a preference (81% agreeing) for this strategy.

The first set of items in the postcourse survey addressed the distance education environment. Students in both locations agreed that a toll-free phone number was needed for contacting the instructors. When asked if the number of video monitors in the classrooms was adequate, 32% tended to agree and 48% tended to disagree. Forty-six percent of the students indicated the instructor spent too much time with the equipment, with the Memphis students indicating stronger agreement. A student responded, "For every three hours of class, one hour and fifteen minutes was productive." The reaction in Memphis may be the result of their direct observation of the instructors' actions. Both groups also indicated (64%) there were too many disruptions due to equipment difficulties. Responses (55% agreeing) from both locations indicated that the graphics were hard to read

on the video monitors. Additional information is needed to determine if the difficulty is due to size, contrast, or equipment limitations.

A second set of items asked the students about the nature of distance education courses. When asked if this course was similar to other courses after getting used to the equipment, most students (80%) indicated it was not. Students in both locations (86%) felt they needed to be informed of what to expect in terms of using the equipment to be heard and seen. Students also indicated (99%) that the instructor needs to be aware of the camera when asking questions of students in either location.

The third set of items asked the students about the teaching strategies used. Students tended to agree (96% on both items) that instructors need intensive training on utilizing the equipment and information on the type of strategies that work in a distance classroom. Students were split in their opinions on the use of questioning with 37% agreeing that an emphasis should be placed on asking questions and 39% disagreeing. There was also stronger support (85%) on the postcourse survey for using small group discussions during class.

The final set of items focused on the effect of the equipment on student performance. Fifty-three percent of the students felt the class was more stressful than other classes because of the presence of video cameras with the Jackson students indicating a stronger agreement. A second item asked if the cameras made the students feel shy about commenting in class. The Memphis students were undecided, but the Jackson classes indicated the cameras did make them feel shy. Again, the Jackson groups were almost always on camera unless the instructor was using a graphic. The Memphis students were only on camera when speaking.

The final question asked the students to rank five options for how they would prefer that the class be taught. The results show that students least prefer watching a videotape and most prefer the instructor calling on volunteers to answer questions. The second preference was for instruction delivered by lecture method with interaction by

students asking questions. The third preference was for asking questions and calling on anyone while the fourth preference was for asking questions and calling only on Memphis students.

Recommendations

Based on the survey responses, interviews, and observations, the following recommendations are made.

First, the problems with the audio need to be corrected as soon as possible. The data suggest that there could be a problem either in the functioning of the circuit or in the quality/appropriateness of the microphones used in the classrooms.

Second, future distance education instructor training programs should include information on strategies that are successful in the distance environment. Possible sources for these strategies are the current and past distance education instructors. A more formal training program could be developed that includes a manual describing instructional strategies (not simply equipment operation). Another aspect of the training might involve extensive practice with positioning the video cameras on different locations in the classrooms.

Third, instructors should consider the use of graphics so the Jackson students are not constantly viewing the picture of their classroom (it is not technically possible for each class to view the other class simultaneously). If a graphic is displayed on one monitor in each classroom, the Jackson class will see only the graphic and the instructor (or student in Memphis who is speaking). These graphics could be as simple as a brief outline of the main point of the lecture to a well-designed visual developed with a drawing program and printed on a laser printer. This tactic may reduce the discomfort experienced by the Jackson class in viewing themselves on the second monitor.

Fourth, students in both locations expressed agreement that a toll-free phone number is needed for accessing the instructors. A toll-free number may substitute for the face-to-face contact with the instructor that Jackson students miss.

Fifth, a different method of controlling the position of the cameras is needed. The current method requires the instructor to coordinate the stylus on the touch page and watch the video monitor. One instructor suggested the use of a joy stick type device that does not require the eye-hand coordination of the stylus and pad.

Sixth, students need to be informed of how they need to talk so the other class can hear their questions, answers, and comments. This information might be conveyed as part of the course introduction with demonstrations.

Although more research is needed, the present findings suggest that the most effective instructional strategy is a well-designed lecture supported by planned visual aids. Instructor presentations are less affected by the limitations of the distance learning environment than are interactive, recitation-type strategies or whole-classroom discussion. Difficulty with the latter methods is the emphasis on students attending to and processing communication from other students who may not be seen at all or clearly heard. Student-to-student interactions *between* classes are awkward and detract from the momentum of the instruction. Another method that appears to work well is group projects or discussions *within* classes that require only limited between-class interactions.

Although the processes and equipment are often referred to as "interactive distance education," the term interactive should not imply that an instructor must design a lesson which relies on or requires interaction between the two locations. Rather, the term should be considered a capability of the equipment which the instructor and class can use when it benefits the instruction. In general, instructors need to become better skilled at orienting their instructional methods to the special conditions of the distance learning context, without trying to force fit technology and strategies that are dissonant.

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Notes

Support for this study was provided by the Center for Research in Educational Policy, College of Education, Memphis State University. The views expressed are those of the author(s) and do not necessarily reflect the position or policy of the Center, the College, or the University. The Center for Research in Educational Policy is a Center of Excellence for the State of Tennessee.